Phone 563.556.8392
Toll-free 800.678.6565
Fax 563.556.5321
4131 Westmark Drive
Dubuque, IA 52002-2627
www.eaglepoint.com

Eagle Point Solution to a Frequently Asked Question

How to Design a Vegetated Waterway Using RoadCalc – Survey Method – Topography

Summary:
This document explains the process of designing a vegetated waterway in RoadCalc using a complete topography of the waterway.

Product: Eagle Point Software™ 2004
Release: 2004 Q3 or 4.3.0 and greater
Platform: All
Related documents: *How to Design a Vegetated Waterway Using RoadCalc – Survey Method – Part II*

The tips, solutions and suggestions contained in Eagle Point Solution Papers, any Eagle Point Technical Assistance Document or given by an Eagle Point Technical Assistance Representative are suggested for use at your own risk. Document contents are subject to change without notice. No warranty of any kind, expressed or implied, is made with respect to such tips, solutions, and suggestions except as may be expressly stated in the licensing agreement or other contractual document, including, without limitation, any warranty of merchantability of fitness for a particular purpose. In no event is Eagle Point Software Corporation liable for incidental or consequential damages in connection with or arising out of the use of such tips, solutions and suggestions.

AutoCAD is a registered trademark of Autodesk, Inc. MicroStation is a registered trademark of Bentley Systems, Inc. All other product names are trademarks of their respective holders.

As always, should you have any questions regarding any phase of installation, contact Eagle Point Technical Assistance at (800) 477-0909.

Survey Method

A complete topog of the waterway was obtained. The proposed CL of the waterway is marked with flags and the flags are identified on the survey.

Notation Method

Button to Press *Displayed Text* **Icon** Action {Text to Enter} *Menu Item…*

Things to Do First

1. Create an Eagle Point project and create the original ground surface and if stripping is desired create a subsurface.
2. Open the Eagle Point project that has the original ground survey to use, and have only one dwg file open.
3. In AutoCAD, click on *Tools… Options…System….*
4. Checkmark *Single drawing compatibility mode*. Click OK.

Starting a RoadCalc Sub-Project Using an NRCS Prototype

1. At the EP Main Menu click on *File… New….*
2. Highlight *Road Calc Sub Project* and click Next.
3. Make sure that the correct main project name is highlighted in the top box.
4. Input a project description. E.g. {Jensen WW 1}.
5. At the prototype setting pull down to select *NRCS 11x17 Waterway*.
6. Click Next.
7. Highlight the main project drawing and click Finish.
8. At the Open Project box highlight the RoadCalc project.
9. Click OK.
10. Click on EP Main Menu *Tools…Plot Scales….*
11. Input the horizontal scale that you will use in a profile sheet. Example 1” = {100} feet. Press Tab.

12. Input the vertical scale that you will use in a profile sheet. Example 1" = {5} feet. Press Tab.
13. Click OK.
    Note: You can minimize the Eagle Point & RoadCalc menus but you should NOT close out the EP main menu.

Place an Object for the Centerline and Convert it to the Alignment

1. From CAD, right click **Osnap**… *Settings*… and checkmark only *Nodes* and *Object Snap On*. Click **Polyline**.
2. Draw a line that represents the centerline of the proposed waterway, snapping to the proposed CL shots.
3. Optional: Apply a radius at every vertex of the centerline alignment.
   A) Click **Fillet**. Input R. Press Enter. Input 1. Press Enter.
   B) Input P. Press Enter.
   C) Click on the polyline that represents the CL of WW.
4. Click *NRCS/EP... Waterway RoadCalc >> Alignment*: *Convert Object*….
5. Click on the line that represents the centerline. Press Enter.
6. Click a point close to the end of the waterway with the lower stationing.
7. Pull down Alignment as *Centerline*.
8. **If** the beginning stationing of the centerline is know:
   A) Input a Beginning stationing of the alignment. E.g. {0}.
   B) Click Apply.
9. Or, **If** a reference point or baseline exists along the centerline with a known stationing:
   A) Click Station Data….
   B) Click Reference Station….
   C) Click in Northing.
   D) Click the **Pick In CAD** button.
   E) Snap to the intersection of the centerline & the known baseline reference point.
   F) Input the Station value of the baseline E.g. {350}.
   G) Click OK.
   H) Note that the Beginning Station value appears in the box. If this looks realistic click OK.
   I) Click Apply.
10. Click *NRCS/EP... Waterway RoadCalc >> Alignment: Edit Data*….
11. Pull down Alignment as *Centerline*.
12. Review the alignment points & coordinates. Click Close.

Place Station Labels into Drawing

1. From AutoCAD, click *EP... Drafting*. (Drafting menu will appear within CAD menu).
2. Click *Annotate… Alignment Stationing*….
3. Click Defined Alignments….
4. Select the Centerline and Click OK.
5. Click Apply. Click Close.
6. Click *EP… AutoCAD…* to switch out of the Drafting menu.

Cut Cross-Sections from the Original Ground and Subsurface TIN

1. Click *NRCS/EP... Waterway RoadCalc >> Cross Section*: *Extract from Surface*….
2. Checkmark *Stationing Interval* and Input the spacing of the cross-sections that you want to use. You can choose specific cross-sections to plot later. E.g. {100}.
3. Checkmark *Mark Stations for Extraction*.
4. Click OK.
5. Checkmark surfaces to extract for *Ognd* & *Subsurf*.
6. Pull down the Surface Model name to the correct surface model that exists in the EP project. *Ognd => Original Ground*, *Subsurf=> Stripping*
7. Input left corridor edge as a negative. E.g. {-80}.
8. Input right corridor edge as a positive. E.g. {80}.

9. The stationing list shows the locations marked to have sections created.
10. To add an additional station such as at a fence, click **New Station** and input the stationing. E.g. {525}. Click OK.
11. When ready to have sections created click OK.

View the Cross-Section Data

1. Click *NRCS/EP... Waterway RoadCalc >> Cross Section: Edit Data*….
2. Highlight the desired station in the top half of the screen and the data points for that station will appear in the bottom portion of the screen.
3. Click on the **Query Cross-Section** icon to preview any Cross Section. Use the **+** or **–** buttons to scroll through each of the cross sections. Click Close when done.
4. Click Close.

Create an Existing Ground Profile

1. Click *NRCS/EP... Waterway RoadCalc >> Profile: Extract from Surface*….
2. Pull down Profile Name as *Ognd*.
3. Pull down the original ground name for Surface Model, E.g. *Ognd*.
4. Click OK.
5. Select the centerline alignment object.
6. Click Save Changes as Yes.
7. Click **Zoom Extents** to see the profile of the Original Ground extracted from the surface model.

Continue with *How to Design a Vegetated Waterway Using RoadCalc – Survey Method – Part II*.

Submitted by Norman Friedrich.